LESSON MAKER PRO

Inputs in Context

Find which inputs and outputs are possible.

HIGH SCHOOL · MT.CORE.ALG.FUN.5

MT.CORE.ALG.FUN.5 "Identify the domain and range of a function, including considering the constraints imposed by context. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities."

NAME _____ DATE _____

DOMAIN AND RANGE

The domain is every allowed input. The range is every output those inputs produce. A context may allow any value in an interval or only whole-number values.

WORKED EXAMPLE

The table shows every input and output of a function. Find its domain and range.

Input	Output
31	42
33	42
35	46

1. List the inputs: 31, 33, 35.
2. List the outputs without repeats: 42, 46.

Answer: Domain: {31, 33, 35}. Range: {42, 46}.

PRACTICE 4 problems

1 For the pairs (1, 8), (2, 8), and (5, 6), find the domain and range.

ANSWER _____

2 For y = 2x + 5 and x in {1, 2, 6}, find the domain and range.

ANSWER _____

3 For y = x + 6 and 1 ≤ x ≤ 5, find the domain and range.

ANSWER _____

4 For y = 20 - 2x, x is a whole number from 1 through 5. Find the domain and range.

ANSWER _____

APPLY IT Show your work

1 A student plans a community walk near Salish Kootenai College. They walk at 2 miles per hour for up to 3 hours. Let t be hours walked and d = 2t be miles walked. Find the domain and range.

WORK SPACE

ANSWER _____

2 At a youth basketball tournament in Browning on the Blackfeet Reservation, a student has 9 snack bags to sell for $4 each. Let x be bags sold and y = 4x be dollars earned. Find the domain and range.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A bike rental costs $8 plus $5 per hour. Rentals last 1 to 4 whole hours. Let x be hours and y = 5x + 8 be the cost in dollars. Find the domain and range. Is $20 a possible cost? Explain.

WORK SPACE AND ANSWER

Inputs in Context

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For the pairs (1, 8), (2, 8), and (5, 6), find the domain and range.	**Domain: {1, 2, 5}. Range: {6, 8}.**
2	For y = 2x + 5 and x in {1, 2, 6}, find the domain and range.	**Domain: {1, 2, 6}. Range: {7, 9, 17}.**
3	For y = x + 6 and 1 ≤ x ≤ 5, find the domain and range.	**Domain: 1 ≤ x ≤ 5. Range: 7 ≤ y ≤ 11.**
4	For y = 20 - 2x, x is a whole number from 1 through 5. Find the domain and range.	**Domain: {1, 2, 3, 4, 5}. Range: {10, 12, 14, 16, 18}.**

PART 2 · APPLY IT

1. **Domain: 0 ≤ t ≤ 3. Range: 0 ≤ d ≤ 6.** Time can include parts of an hour. Multiplying the endpoints by 2 gives distances from 0 to 6 miles.
2. **Domain: {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}. Range: {0, 4, 8, 12, 16, 20, 24, 28, 32, 36}.** Only whole numbers of bags from 0 through 9 can be sold. Multiply each possible number of bags by 4.

CHALLENGE

Domain: {1, 2, 3, 4}. Range: {13, 18, 23, 28}. No, $20 is not a possible cost because it is not in the range.

Accept interval notation for continuous domains and ranges. For whole-number inputs, answers must list only the possible values.